**DESIGN AND IMPLEMENTATION OF WEB BASED DECISION EXTRACT MANAGEMENT SYSTEM**

**BY**

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**ABSTRACT**

This project describes the Design and Implementation of a decision extract management system. This is a university project and this software can be used by university staffs alone. In this work we consider the paradigm of decision-support systems where several decision-makers must reach a common decision. As a solution we propose an integrated framework based on a distributed architecture where each decision-maker uses a specific cooperative intelligent decision support system. The support system is viewed as a set of computer-based tools integrating human expert knowledge and using collaboration technologies that help decision-makers and provide them with interactive capabilities to enhance their understanding and information base about options through use of models and data processing. The paper briefly mentions a number of websites with innovative Decision support system that highlight current developments. Much remains however to be investigated and studied if DSS are to contribute to an organization success.

The software was developed using PHP, HTML, CSS and JAVASCRIPT. The developed software performed well and produced expected results on completion.

## ATTESTATION

This project, web based decision extract management system using faculty of science as case study, has been carried out in accordance with the standard required by the Computer Science Department, of which is presented by ADEDIRE EMMANUEL KOLAWOLE with Matriculation number **140591003** has been assessed and approved as satisfying the requirement of department of computer science, LAGOS STATE UNIVERSITY, OJO.

Sign ………………………… Date………………………..

Dr. Rahman

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Sign ………………………… Date………………………..

Dr. Bolu Akinnuwesi

(Head of Department)

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## DEDICATION

This project is dedicated to the Almighty GOD, the creator of the whole universe, the fountain of all knowledge and source of all wisdom, who in his infinite mercies saw to the completion of this project.

**CHAPTER ONE**

**1.1 BACKGROUND OF THE STUDY**

On-line activities have in recent past replaced virtually every form of data storage or transaction. This is because of the advent of the internet, which provides a global network connection for all such activities, and the support of high level programming and scripting languages (such as PHP and JavaScript). With this technology, many institutions have their tentacles spread across the globe. In line with this trend, decision extract activities and management need to join the band wagon of the global community in sharing their information across the internet. Decision management systems treat decision as reusable assets and introduce technology at decision points to automate the decision making process. Decisions may be fully automated or they may be presented as possible choices for a human to select. Increasingly, organizations or institutions that deal with financial services, organizing and deciding on a plan to implement are integrating decision-making software into their respective process systems.

In recent years, the advancement of technology has thus brought us into a new era of Web based systems. These systems are also known as enquiry systems and have the ability to input data, with a guaranteed response time and an assurance that the information is accurate and timely, then one is said to have a “Real Time System” . A real time system is also a Web based system and comprises mainly of four (4) main components:

1. A data-gathering component that collects data from the external environment.
2. An analysis component that transforms the received information as required by the application.
3. A control component that responds to the external environment.
4. A monitoring component that co-ordinates all other form of these components so that real-time response can be achieved.

Due to these advancements, organization need no longer be centralized when information services can reach the home and offices for processing from a number of geographical locations. However, Web based systems have helped tremendously in every field of human existence today. Hence this project work provide efficient way of retrieving information, which is essential for users to put their faith and propagate using the system.

**1.2 STATEMENT OF PROBLEM**

Many institutions do not have automated method of extracting decisions and this lower the ability to gain access to information with respect to time. In addition, there is no effective structure to retrieve or store information that is able to stand up to the responsibility of manual method in form of paper. Many institutions still make use of manual method of searching for a particular decision that was taken by a number of people in order to make an effective decision. Also, we find it difficult to locate people that have access to a decisive information, it takes a lot of time and stress. The traditional loss of data is usually characterized by inability to handle or keep large amount of data for a long period of time. There is need for a more effective system that is able to handle academic plan and strategic decision and thereby promoting an effective retrieval information system.

**1.3 AIMS AND OBJECTIVES OF THE STUDY**

The aim of this project is to design and develop a decision extract management system using faculty of science, Lagos state university as a case study. Therefore, the main objectives of this research are listed below

* To design a web-based system for decision extract management system
* To help users or management to share confidential information with limit access to only those who have the need to know.
* To implement a system that disables account with suspicious activities.
* To design a system that helps in making strategic decision
* To implement a form of security model which allows us to enforce access control to information among the users.
* To implement the system.
* To test and validate the system.

**1.4 SIGNIFICANCE OF RESEARCH**

The purpose of this work is to relieve the burden and problems of storing and extracting decisions that are taken by the management. This work does not aim at displacing the manual way of extracting decisions but to help reduce the problems and delays in decision extract, this work will be useful to all staffs.

In such applications, subjects and objects are often partitioned into different security levels. A subject can only access objects at certain levels determined by his security level. This model will help us enforce right in our decision extract system.

**1.5 SCOPE OF STUDY**

This work covers extraction of decisions. Extract decisions based on the decisions or information stored on the database. This also work covers how the decisions are collected and stored for reference purpose and also to protect the stored data. This project is also scoped to only staffs in the Lagos state university, ojo and it is designed Faculty of Science.

. The scheme to be used is going to be in line with the information collected at the point of this research. All forms and database being designed followed the pattern of the manual means by the institution.

**1.6 METHODOLOGY**

In line with the aim of this study the methodology to be used in achieving the aims is the development of an interactive and well-structured web application decision extract system with different sections following the aims of this study. The web application will use a MySql database to store data gotten from every minute of each meetings, information and decisions. Also, languages like PHP will be used to control the logical aspect and server end of the application. Other languages involved in the developing the system includes;

* HTML
* CSS
* JAVASCRIPT

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1.0 OVERVIEW DECISION EXTRACT MANAGEMENT SYSTEM**

Decisions can be defined as the creation of a commitment to a future course of action (Huisman, 2001). This is obtained through negotiating commitment to a solution to an issue that has been defined as problematic. Most organization has survived the growing pains of learning to develop and use data processing system, many of most of the innovative system has significantly sink under the general heading of decision support. Decision Support System (DSS) is a technology and application that assists managerial decision makers utilizing data and models to solve semi-structured and unstructured problems (Qian, 2004). Decision Support Systems (DSS) evolved early in the era of distributed computing.

Information is very sine-que-non in the development of any society. This is so because information they say is power. According to Gregory (2010), information is a difference that makes a difference. Information also means something to a user if it is communicated in a medium he can easily understand, for example in the rural areas, town criers, village meeting and different agencies from the basis for packaging information. Prior to 1965, it was very expensive to build large-scale information systems. At about this time, the development of the IBM System 360 and other more powerful mainframe systems made it more practical and cost-effective to develop Management Information Systems (MIS) in large companies (Davis, 1974). MIS focused on providing managers with structured, periodic reports. In the late 1960s, a new type of information system became practical, model oriented DSS or management decision systems.

**2.2.0 INFORMATION RETRIEVAL SYSTEM**

An information retrieval (IR) system locates information that is relevant to a user’s query (Croft & Sanderson, 2014). An IR system typically searches in collections of unstructured or semi-structured data (e.g. web pages, documents, images, video, etc.). The need for an IR system occurs when a collection reaches a size where traditional cataloguing techniques can no longer cope (Croft & Sanderson, 2014).Information retrieval is the science of searching for documents, information within documents as well as that of searching relational database and the World Wide Web (Awrt, 2001).

According to Awrt (2001), IR can also be seen as a research and market driven theoretical and experimental inter-disciplinary effort, the facets is on different aspects of the information seeking process depending on the researcher’s background interest. Automated information retrieval systems are used to reduce what has been called information over load. Web search engines are the most visible information retrieval applications. Therefore, once the document are acquired, it need to be organized and controlled so that they can be identified and located in response for various types of users demands.

According to Croft (2014), the indexing process in information retrieval system involves two distinct intellectual steps which are;

* Concept analysis
* Translation of conceptual analysis

The concept analysis which we might also call content analysis of a document and the translation of the conceptual analysis into particular vocabulary. It is rare that the two steps offers different constraints and bring in different factors affecting the performance of the system. For efficient conceptual analysis, the indexer needs both an understanding of what the document is about, that is, some comprehension of its subject matter and a good knowledge of the needs of the system. The recognition of what the document is about and why users may be interested in it, what aspects of the documents are of most importance is what constitutes conceptual analysis. The conceptual analysis of a document may be recorded on paper. It is more likely that it exists only in the mind of the indexer.

The second step in the indexing process in the translation of the conceptual analysis is into some vocabulary of index language. In the majority of systems, this involves the use of a controlled vocabulary, which is limited set of terms that can be used to represent the subject matter of document.

The terms used by an indexer to represent the subject content of documents, whether from a controlled or an uncontrolled vocabulary are referred to as database terms. The database may be termed the indexer to the document store. The steps involved at the output side of the systems are similar to those involved at input. Document representations that match the search strategy that satisfy the logical requirements of the search are retrieved from the data base and delivered to the requester. The process may be complete when the requester is satisfied with the result of the search which may in some cases mean that he is satisfied that nothing in the database is exactly relevant to his needs.

**2.3.0 HUMAN RESOURCE MANAGEMENT**

Human is important and a very valuable asset for an organization and managed by set of elites or professional (DeNisi & Griffin, 2005). Decision extract system is very important element in the success of an organization, known as an integrated and interrelated approaches to managing human resources. Besides that, decision making for processes in Decision extract management system usually depends on human judgment and preference. However, human decisions are subject to the limitation because sometimes people forget the crucial details of the problem, and besides, fairness and consistency are very important in any types of decisions (DeNisi & Griffin, 2005).

**2.4.0 DECISION SUPPORT SYSTEM (DSS)**

The concept of decision support evolved from the theoretical studies of organizational decision making (Peter & Stabell, 1950). Decision support system (DSS) are defined as any interactive computer-based support system for making decision in any complex system when individuals or a team of people are trying to solve unstructured problems on an uncertain environment. Much of the early work on DSS was highly experimental. The aim of DSS developers was to create an environment in which the human decision maker and Information technology based system worked together in an interactive fashion to solve problems, that is, the human dealing with the complex unstructured parts of the problem. The information system provide assistance by automating the structured elements of the decision situation. The emphasis of this process was not to provide the user with a polished application program that efficiently solved the target problem but, rather, the purpose of the development of a DSS is an attempt to improve the effectiveness of the decision maker. In a real sense, DSS is the backbone of decision extract management system.

**2.4.2 ARTIFICIAL INTELLIGENT IN DECISION SUPPORT SYSTEM**

In general, intelligence is the ability to think and understand instead of doing things by instinct or automatically (Negnevitsky, 2005). The basic ideas of intelligence are the studying thought processes of humans, dealing with representing and duplicating those processes via machines. Intelligent abilities and behaviors integrate with computer system will produce an intelligent machine. The machine should help humans to make decision, to search for information, to control complex objects, and finally to understand the meaning of words. According to Adla & Zarate (2006), In order to develop intelligent computer system, we have to capture, organize and use human expert knowledge in some narrow areas of expertise. It is also necessary to upgrade the computational power of the system’s brain with the sophistication of algorithms using sensory processing, world modeling, behavior generation, value judgment and global communication, the amount of information and values the system has stored in its memory, and the sophistication of the process of the system functioning (Negnevitsky, 2005).

**2.4.3 BRIEF HISTORY OF DECISION SUPPORT SYSTEM**

Prior to 1965, it was very expensive to build large-scale information systems. At about this time, the development of the IBM System 360 and other more powerful mainframe systems made it more practical and cost-effective to develop Management Information Systems (MIS) in large companies (Davis, 1974). MIS focused on providing managers with structured, periodic reports. Much of the information was from accounting and transaction systems.

By 1975, J. D. C. Little was expanding the frontiers of computer-supported modeling. Little's DSS called Brandaid was designed to support product, promotion, pricing and advertising decisions. Also, Little (1970) in an earlier article identified criteria for designing models and systems to support management decision--making. His four criteria included: robustness, ease of control, simplicity, and completeness of relevant detail. All four criteria remain relevant in evaluating modern Decision Support Systems.

**2.5.0 DATABASE MANAGEMENT SYSTEM**

In a database management system, Seltzer (2000) defined database management system as a set of software programs that controls the organization, storage, management and retrieval of data in a database. The database management system accepts request for data from the application program and instructing the operating system to transfer the appropriate data. When a database management system is used, information systems can be changed much more easily as the organization’s information requirements change. New categories of data can be added to the database without disruption to the existing system

Finally, database management system uses any of a variety of database models such as the network model or relational model. In large systems, a database management system allows users and other software to store and retrieve data in a structured way.

## 2.6.0 OVERVIEW OF WEB PORTAL

According to Maedche (2002), a web portal, also known as a link page, presents information from diverse sources in a unified way. They go beyond static web pages and require a sign-on which links to some knowledge the organization has collected about the visitor. That knowledge allows portals to be tailored to meet individuals need.

From portal business dictionary (2009), portals go beyond the delivery of static information and often provide access to services offered by the organization. A portal makes network resources (application, databases, etc.) available to end users. The user can access the portal via a web browser, WAP phone, pager and other devices. Portals include network enabling services such as e-mail, chat rooms and calendars that interact seamlessly with other applications. Most web portals allows for adding personal links as portal providers realize that user may have other interest beyond the organizational boundaries. Personalization will make the portal more appealing to the user r make it sticker. A portal allows you to enter your own data space, a space where you can view and do what you want to do and not what someone else think that you want or should do.

## 2.7.0 TYPES OF WEB PORTALS FOR DECISION EXTRACT SYSTEM

According to portal business dictionary, the following are the types of portal.([BCUBESOLUTION.COM, 2015](#_ENREF_1)).

**2.7.1 Personal Portals**

A personal portal is a site on the World Wide Web that typically provides personalized capabilities to its visitors, providing a pathway to other content. It is designed to use distributed applications, different numbers and types of middleware and hardware to provide services from a number of different sources. Portals are not limited to simply providing links. Information or content that you are putting on the internet creates a portal, or a path to new knowledge and/or capabilities.

**2.7.2 Vertical Information Portals (VIP)**

VIP is a specialized entry point to a specific market place and/or industry niche. It provides news, editorial content, digital publications and e-commerce capabilities. It provides dynamic multi-media including social networking, video posting and blogging.

### **2.7.3 Search Portal**

The search portal aggregate results from several engines into one page ([Maedche, 2001](#_ENREF_5)), added the following types of portal:

**2.7.4 Corporate Web Portals**

Corporate intranets became common during the 1990s. As intranets grew in size and complexity, webmasters were faced with increasing content and user management challenges. A consolidated view of company information was judged insufficient; users wanted personalization and customization. Webmasters, if skilled enough, were able to offer some capabilities, but for the most part ended up driving users away from using the intranet. Any companies began to offer tools to help webmasters manage their data, applications and information more easily, and through personalized views.

**2.7.5 Hosted Web Portals**

As corporate portals gained popularity a number of companies began offering them as a hosted service. The hosted portal market fundamentally changed the composition of portals. In many ways they served simply as a tool for publishing information instead of the loftier goals of integrating legacy applications or presenting correlated data from distributed databases. The early hosted portal companies such as Hyperoffice.com or the now defunct InternetPortal.com focused on collaboration and scheduling in addition to the distribution of corporate data. As hosted web portals have risen in popularity their feature set has grown to include hosted databases, document management, email, discussion forums and more. Hosted portals automatically personalize the content generated from their modules to provide a personalized experience to their users. In this regard they have remained true to the original goals of the earlier corporate web portals.

**2.8.0 PROBLEMS & SOLUTION OF DECISION EXTRACT SYSTEM**

According to Morton (1971), Web-Based DSS have reduced technological barriers and made it easier and less costly to make decision relevant information and Model-Driven DSS available to managers, staff users, customers and suppliers. The Web has increased access to DSS and it should increase the use of well-designed decision support systems. Existing automatic storage and retrieval system suffer from a variety of users, perhaps the most obvious problem is the miss match between the requirements of a sophisticated electronic system and the retrieve ignorance of those who use it (Hamidah & Zulaiha, 2010). Using a Web infrastructure for building DSS can improve the rapid dissemination of "best practices" analysis and decision making frameworks and it should promote more consistent decision-making on repetitive tasks. Managers, Staffs and MIS professionals should note that Web-Based DSS could provide companies with a competitive advantage. These proprietary systems will primarily impact internal decision processes and make them faster and more predictable. Web-Based DSS can also improve problem solving where a decision is required. The Web is where the DSS action is today.

# **CHAPTER THREE**

# **SYSTEM DESIGN**

# **3.1 System Design**

The DEMS (Decision Extract Management System) system design defines the architecture, components/subsystems, modules, interfaces and data required of the system to satisfy specified requirements. In system design the following tools and techniques were used; process architectural design, data modeling and database design.

## 3.2 System Description

The DEMS Web Application is a system that enables staffs of Lagos State University, Ojo, Faculty of Science to share confidential informations and enables other users limit access to only those who have the need to know. To achieve this functionality, HTML and CSS have being used to develop and beautify the interface, JavaScript is used to validate some of the inputs and also validate some of the functions of the system. PHP has also being used to communicate with the database on sharing and storing data.

### **3.2.1 Data Flow**

A Data Flow Diagram is the sequence of path data takes at it is generated on the system. It shows how data is processed if such data is valid and also specifies what happens when such data is invalid.

A diagrammatic representation of the flow of data in this web application is shown

**Yes?**

**Failed?**

**No?**

**Failed?**

**Menu**

**Home Page**

**Login**

**Error**

**Registered?**

**Error**

**Lecturer Dashboard**

**Success?**

**Success?**

**Is Admin?**

**Admin Dashboard**

**Menu**

**Edit Profile**

**All Decisions**

**My Decisions**

**Add Decisions**

**Change Password**

**All Decisions**

**All Staff**

**Add Staff**

**Modify Staff Account**

**Add Decisions**

Fig 3.1 Data Flow diagram for DEMS

### **3.2.2 System Architecture**

DEMS is a web-based application to be hosted on a web server that communicates to a database server. The user on a web interface makes a web request which is received by the web server. The web server processes the request and interacts with the database server using SQL embedded in PHP scripts. The response is a web page data sent on the web interface for the user. In addition to this, a full database driven site with good user interface will be achieved.

The DEMS system consists of two different parts which are the Staff Interface, Administrator Interface. The Staff Interface provides the functionality which enables a staff to add one or more decisions at a time, view any decision on his or her dashboard, upload a file, modify a decision shared by him or her, download an attached file, change staff level, change name, change email and change password. Secondly, the Administrator interface allows the administrator to create a new staff account, view and modify a decision shared, upload a file, download an attached file, remove a staff, freeze a staff account and update a staff decision unit level.

**USER**

**FRONT END**

**User Interface**

**User Authentication**

**Data Entry**

**View Decision**

**User Interface**

**SYSTEM LOGIC**

**User Interface**

**Authentication**

**Data Integrity**

**View Information**

**Security**

**User Interface**

**Add decision**

**Decision**

**DEMS**

**(Database)**

Fig 3.2 Basic Architecture for DEMS

### **3.2.3 Input Specification**

This is an interface between the user and the system that allow the user to enter data. Data input is generally done through the standard terminal keyboard or with the mouse in case of combo boxes, option lists (or command buttons). At this stage, different screen (window or forms) are designed to guide data entry procedure. The input variables needed for this work are based on two categories of users:

1. Staff**:** Login form that requires username (staff id) and password, after logging in, there is the decision form that allows a staff to add decision, a profile form that allows a staff to modify their existing details like change password, name, email etc.
2. Administrator: Login form that requires username and password, after logging in, there is a form that allows the administrator creates new staff, a form to add decisions and another form to update staff account etc.

### **3.2.4 Functional Requirements**

1. The system shall accept valid input of registered staffs’ decision details from users intending to share a decision.
2. The system shall produce all decisions available to a specific authorized user.
3. The system shall provide feedback to the administrator describing the status of the user account.
4. The system shall provide a platform to modify the student account details.
5. The system shall be able to generate decisions to staffs.

### **3.2.5 Non Functional Requirements**

1. The system should be easy to maintain.
2. The system should be compatible with different platforms.
3. The system should be fast as end users always need speed.
4. The system should always be available online all times.
5. The system should be secure.
6. The system should be accessible to online users.
7. The system should be easy to learn by both sophisticated and novice users.
8. The system should provide easy, navigable and user friendly interfaces.
9. The system should have a standard graphical user interface that allows for the on-line data entry, editing, and deleting of data with much ease.

## 

## 3.3 Database Design

One major consideration of the work is to determine a suitable file structure and organization so as to maintain integrity, reduce redundancy, and ensure easy retrieval of data from the application. This phase specifies all the files used for the system and their structures. The database is designed using MySQL. The Decision Extract Management System (DEMS) designed specifically for the case study of Faculty of Science, Lagos State University, Ojo, is made of database objects such as entities (tables), routines, attributes (fields), views (virtual tables) etc. The table names, field names, data type, character length, attributes, null, default values, extra action and other descriptions for all tables used are also specified.

### **3.3.1 Database Schema Diagram**

Below is a diagram showing an entity relationship diagram for the Decision Extract Management System.

Fig 3.3 DEMS Database Schema diagram

The schema in figure 3.3 comprises of various entities (tables) such as

1. **Tbl\_admin:** This table records the name, username and password of the administrator.
2. **Tbl\_user:** This table keeps record of staffs that have registered created by the administrator to use the DEMS system.
3. **Tbl\_decison:** This table keeps record of all decisions which includes the decisions uploaded by staff and administrator.

# CHAPTER FIVE

# CONCLUSION

## 5.1 Summary

The project work covered all the basic processes involved in designing and developing a web based decision extract management system. The system is aimed to address the problems associated with the current issues involved in storing of decisions made by the management and retrieving the decisions based on the user decision security level at Faculty of Sciences, Lagos State University, ojo.

The staff record is created by the administrator and only after this step can the staff be able to use the system. The staff is advised to change his or her password after the account is created by the administrator to maintain all security services. The staff can access and share any type of decision. Only decision related to a staff decision security level can be viewed. Also the staff can update his or her record at any point in time. This process is possible as far as the staff account remains active i.e. not deactivated by the administrator due to suspicious activities.

The function the administrator can perform is to create a staff account, modify the staff account, share a decision to the entire staff, and deactivate staff account and using the application. There are forms on different pages of the application that makes the administrator achieve these functions.

**5.2 Conclusion**

Advancement in technology is making automation of mechanical activities become a very important aspect of our daily lives. Since the use of computers is now widespread, the adoption of this system will make life become easier for us all.

The project sought to develop a decision extract management system that provides relief of the long endured problems of the current modes of storing and extracting decisions in Faculty of Science, Lagos State University, ojo.

Overall, Web-based decision extract systems show great promise for contributing to the success of institution, but more research can help improve the design and implementation of these systems. Improved query formulation will cope more effectively with improved systems and easier ways of using them, automatic information storage and retrieval will become common place in our lives.

## 5.3 Recommendations

Having met the specified objective of the proposed project and after a profound evaluation of the developed system, I will like to suggest the following recommendations for further research work and improvement opportunities

1. Lagos State University should embrace and implement the developed system as it will improve the conditions of extracting decision.
2. The researchers acknowledge that security is a threat to every system and therefore encourage that maximum effort be dedicated to ensure security of the online transactions through establishment of sound security infrastructure.
3. A mobile version of the system should be created to allow user access the system from any device other than a computer thus improving the mobility of the device.

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